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Green synthesis of Copper Nanoparticles using Leaves Extract of *Ficus religiosa* and Evaluation of their Antimicrobial Potential with Special Reference to Wound Associated Biofilm Forming Pathogens.

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Biofilm is a major factor responsible for impaired/delayed healing of wounds as it creates hindrance in healing processes, resulting in delayed wound healing. Impaired healing leads a wound from acute to chronic state of inflammation. Due to inflammation in wound site bioburden gets increased and become a major problem as it constitutes descendent tissue cells, proteinaceous exudates, and microorganisms which are responsible factors for prolonged infection leading formation of strong biofilm. Wound biofilm is impervious to host immune system they can feed off the secreted exudates and promotes inflammation. Microorganisms endorsed in biofilm secrete matrix like substance known as exopolysaccharides (EPS) which procreates a high counteraction to host immune responses and limit the penetration of antibiotics into wound-biofilm system. This study is related to synthesis of metallic nanoparticles using plant extract of *Ficus religiosa* and to check their efficacy as a potential antimicrobial agent with special reference to wound associated pathogens which are reported to form biofilm in chronic wounds. In this study microorganisms were isolated from clinical samples obtained from wounds and their identification and pathogenicity were tested by biochemical and haemolysis test. Biosynthesis of copper nanoparticles were done using *Ficus religiosa* plant leaves extract and were characterised using UV Visible, XRD and FTIR techniques and their efficacy evaluation is checked by Well diffusion method and Minimum inhibitory concentration tests. The microbes isolated from wound samples were pathogenic as per the observed haemolytic patterns. Synthesised copper nanoparticles were having an average particle size of 26 to 100 nm. They are eco-friendly, economic and biocompatible in nature. These particles have shown effective antimicrobial property towards the wound associated pathogens so further can be used for drug designing purposes to sustain fast healing of the chronic wounds infected with biofilm and biofilm forming pathogens.

Key words: Nanotechnology, Biofilm, wounds, copper nanoparticles.